REMARKS/ARGUMENTS

Claims 1-24 remain pending in the application. The Applicant hereby requests further examination and reconsideration of the application in view of these remarks.

Prior-Art Rejections

On pages 2-6 of the September 1, 2009, Office Action, the Examiner rejected claims 1-24 under 35 U.S.C. 102(e) as being anticipated by U.S. Pat. No. 7,009,991 B2 to Shachar et al. ("Shachar"). For the following reasons, the Applicant submits that all of the pending claims are allowable over Shachar.

Claims 1 and 17

In rejecting claim 1, the Examiner argued that Shachar discloses all the elements of claim 1, including (1) "representing, in a network data structure, information associated with a mesh network …, wherein the network data structure comprises, for each link in the network and each node or other link in the network, a representation of a minimum amount of protection bandwidth required to be reserved on said each link to restore service upon failure of said each node or other link," (2) "receiving a request for a new service in the network, wherein the new service is represented by a service data structure comprising an identification of each link and transit node in a primary path for the new service," (3) "determining, using the network and service data structures, whether the new service requires additional protection bandwidth to be reserved on any link in the network," and (4) "updating the network data structure if any additional protection bandwidth is determined to be required for the new service." The Applicant submits that Shachar does not teach these elements of claim 1.

As an initial matter, it should be noted that, while claim 1 is directed to a mesh network, Shachar is directed to a ring network (*see, e.g.*, column 1, lines 16-19). In a ring network, each node is connected to two adjoining nodes and all the nodes are connected together to form a circle (*see, e.g.,* Shachar at Fig. 9). A mesh network comprises a plurality of nodes interconnected by a plurality of links. Although a ring network might be represented as a mesh network, the reverse is not necessarily possible.

One salient difference between a mesh network and a ring network is in the handling of a link failure. In a mesh network, primary and restoration paths are typically calculated to keep nodes interconnected in case of a failure of a node or link (*see, e.g.*, originally filed speciation, at

page 2, line 1). Thereafter, a link failure in a primary path may be handled by switching to the corresponding restoration path (*see, e.g.*, originally filed Specification at page 7, lines 9-24). In a ring network, however, dual counter-rotating rings are implemented so that the nodes can still transmit in at least one direction after a fiber cut (*see, e.g.*, Shachar, column 9, line 66 – column 10, line 14, and Fig. 9). Consequently, in a ring network, there is no need to calculate primary or restoration paths since they are essentially self-evident from the network topology, once the network is established (*see, e.g.,* Shachar at Fig. 1A). Shachar teaches calculating and updating reservation maps, which reserve a wavelength for a source node for a particular time slot (*see, e.g.*, column 6, lines 36-39), but does not teach calculating what nodes and links are to be part of any primary and/or restoration paths.

Element (1)

The Examiner asserted that the demand vector of Shachar corresponds to the network data structure of claim 1. The Applicant submits that Shachar's demand vector does not correspond to the network data structure. For a network having L links and N nodes, a corresponding network data structure would comprise, for each of the L links and each of the N nodes or L-1 other links in the network, a representation of a minimum amount of protection bandwidth required to be reserved on said each of the L links to restore service upon failure of said each of the N nodes and L-1 other links. Consequently, the network data structure would need to be able to represent up to $L*(N+L-1)$ different bandwidth data points. The demand vector of Shachar, however, represents, for one slave-node, its resource demands for each other destination node (*see*, Shachar at column 9, lines 20-22). First, the Shachar demand vector is a one-dimensional data structure of length N-1, while the network data structure would represent a two-dimensional L by (N+L-1) data array. Second, the demand vector contains no information about links in the network, while the network data structure primarily comprises information about links. Third, the resource demands data of the demand vector are not equivalent to the minimum protection bandwidth data of the network data structure. Fourth, the resource demand data of the demand vector has nothing to do with path restoration upon failure of a node or link of the network. Consequently, it cannot be said that the demand vector of Shachar corresponds to the network data structure of claim 1.

The Examiner asserted that the committed bandwidth of Shachar corresponds to the minimum amount of protection bandwidth of claim 1. The Applicant submits that such is not so.

The committed bandwidth of Shachar "specifies the number of time-slots per reservation map the node need[s] for each of its destination nodes" (column 9, lines 24-27). This has nothing to do with protection bandwidth on a link, particularly since the committed bandwidth (a) relates to primary bandwidth and not backup bandwidth and (b) relates that primary bandwidth to a node and not a link. Consequently, it cannot be said that the committed bandwidth of Shachar corresponds to the minimum amount of protection bandwidth of claim 1.

Element (2)

The Examiner asserted that Shachar at column 9, lines 20-32, discloses receiving a request for a new service. The cited section, however, describes a phase in the negotiation between slave nodes and the master node to compute a reservation map. Neither the cited section nor any other section of Shachar teaches anything about receiving a request for a new service in the network. Consequently, it cannot be said that Shachar teaches this element of claim 1.

Element (3)

The Examiner asserted that Shachar at column 9, lines 27-40, discloses determining whether the new service requires additional protection bandwidth to be reserved on any link in the network. The cited section, however, describes negotiation between slave nodes and the master node to compute a reservation map. Neither the cited section nor any other section of Shachar teaches anything about protection bandwidth, let alone reserving protection bandwidth on a link. Consequently, it cannot be said that Shachar teaches this element of claim 1.

Element (4)

The Examiner asserted that Shachar at column 9, lines 35-59, discloses updating the network data structure if any additional protection bandwidth is determined to be required for the new service. The cited section, however, describes negotiation between slave nodes and the master node to compute a reservation map. Neither the cited section nor any other section of Shachar teaches anything about the claimed network data structure or protection bandwidth, let alone updating the network data structure if any additional protection bandwidth is determined to be required for the new service. Consequently, it cannot be said that Shachar teaches this element of claim 1.

In view of the foregoing, the Applicant submits that claim 1 is allowable over Shachar. For similar reasons, the Applicant submits that claim 17 is also allowable over Shachar. Since

claims 2-16 and 21-24 depend variously from claim 1, and claims 18-20 depend variously from claim 17, it is further submitted that those claims are also allowable over Shachar.

Claim 6

In rejecting claim 6, the Examiner asserted that Shachar discloses all the elements of claim 6, including "determining a restoration path for the new service in the network using the network data structure." The Applicant submits that Shachar does not teach this element of claim 6.

The Examiner specifically cited Shachar at column 9, lines 2-14, as allegedly teaching this element. The Examiner asserted that the cited section teaches "using the demand vectors to create the restoration map." The Applicant submits that the Examiner mischaracterized Shachar, which discusses a reservation map, and which nowhere mentions the term "restoration." A reservation map, as noted above, reserves a wavelength for a source node for a particular time slot (*see, e.g.*, column 6, lines 36-39) and is not equivalent to the claimed restoration path. Consequently, it cannot be said that Shachar teaches the above-quoted element of claim 6.

Therefore, the Applicant submits that the above reasons provide further grounds for the allowability of claim 6 over Shachar.

Claim 7

In rejecting claim 7, the Examiner asserted that Shachar discloses all the elements of claim 7, including that (1) "each vector in the array has a plurality of entries corresponding to the nodes and links in the network" and (2) "a primary path vector having a plurality of entries corresponding to the nodes and links in the network, wherein ... each entry of the primary path vector identifies whether the corresponding node or link is part of the primary path for the new service." The Applicant submits that Shachar does not teach these elements of claim 7.

Element (1)

The Examiner asserted that the demand vectors of Shachar correspond to the vectors of Element (1). As noted above, Shachar's demand vector represents, for one slave-node, its resource demands for each other destination node (*see*, Shachar at column 9, lines 20-22). Nowhere does Shachar disclose a demand vector having entries corresponding to links in the network. As a result, it cannot be said that Shachar teaches this element of claim 7.

Element (2)

The Examiner specifically asserted that Shachar at column 9, lines 20-47, allegedly discloses Element (2). The cited section, however, describes negotiation between slave nodes and the master node to compute a reservation map. Neither the cited section, nor any other section of Shachar, teaches anything about a vector having a plurality of vectors corresponding to the nodes and links in the network, let alone where each entry of the vector identifies whether the corresponding node or link is part of the primary path for the new service. Consequently, it cannot be said that Shachar teaches this element of claim 7.

Therefore, the Applicant submits that the above reasons provide further grounds for the allowability of claim 7 over Shachar. For similar reasons, it is submitted that they also provide further grounds for the allowability of claim 21-23 over Shachar. Since claims 8-10 depend variously from claim 7 and claim 24 depends from claim 21, it is further submitted that these reasons also provide further grounds for the allowability of those claims over Shachar.

Claim 8

In rejecting claim 8, the Examiner asserted that Shachar discloses all the elements of claim 8, including "applying a vector addition operation between the primary path vector corresponding to the new service request and the vector of the array corresponding to the link *A* to form a result vector, and comparing the maximum value in the result vector with the bandwidth already reserved on the link *A*." The Applicant submits that Shachar does not disclose this element of claim 8.

The Examiner specifically cited Shachar at the Abstract, column 5, lines 65-67, and column 7, lines 30-47, as allegedly teaching this element. The cited sections describe construction of a reservation map. Whatever mathematical operations are shown in the cited sections, they do not show vector addition between a primary path vector and a vector corresponding to a link. Furthermore, the cited sections do not show comparing the maximum value in a result vector with the bandwidth already reserved on a link. In fact, the only use of any form of the term "compare" in Shachar is in comparing spanning-tree to daisy-chain multicast methods (Shachar, column 10, line 60 – column 11, line 2). Consequently, it cannot be said that Shachar teaches this element of claim 8.

Therefore, the Applicant submits that these reasons provide further grounds for the allowability of claim 8 over Shachar. Since claims 9-10 depend from claim 8, it is further

submitted that these reasons also provide further grounds for the allowability of those claim over Shachar.

Conclusion

In view of the above remarks, the Applicant believes that the pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

Fees

During the pendency of this application, the Commissioner for Patents is hereby authorized to charge payment of any filing fees for presentation of extra claims under 37 CFR 1.16 and any patent application processing fees under 37 CFR 1.17 or credit any overpayment to **Mendelsohn, Drucker, & Associates, P.C. Deposit Account No. 50-0782.**

The Commissioner for Patents is hereby authorized to treat any concurrent or future reply, requiring a petition for extension of time under 37 CFR § 1.136 for its timely submission, as incorporating a petition for extension of time for the appropriate length of time if not submitted with the reply.

Respectfully submitted,

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